



Montana Board of Oil and Gas Conservation
2535 St. Johns Avenue
Billings, MT 59102
Via Email to mtogpub@mt.gov
February 9, 2018

Re: Hydraulic Fracturing Rulemaking

To the Members of the Montana Board of Oil and Gas Conservation:

Please accept the following comments concerning the Board's hydraulic fracturing rulemaking, which are submitted on behalf of the Montana Environmental Information Center, Natural Resources Defense Council, Bonnie and Jack Martinell, Dr. David Lehnherr, David Katz, Anne Moses, Dr. Mary Anne Mercer, and Dr. Willis Weight. We appreciate this opportunity to comment on appropriate amendments to the Board's regulations to implement SB 299, codified at MCA §§ 82-10-601 – 82-10-604, which establishes important new statutory requirements for hydraulic fracturing chemical disclosure, and to ensure that the required disclosures are made sufficiently in advance of well completion activities to be useful to the public.

In addition, we take this opportunity to underscore the need for rules requiring oil and gas operators to fund baseline and post-drilling testing of water sources near their operations as a condition for receiving a permit to drill.

1. Background

Securing public access to information about the chemicals used for hydraulic fracturing, or “fracking,” in our state is a matter of substantial public concern. Peer-reviewed scientific literature documents serious health risks associated with many chemicals used in fracking fluids. For example, chemicals used in fracking fluids can harm the developing brain and central nervous system of infants and young children,¹ and living near fracked oil and gas wells is associated with low birth weight and other adverse infant health outcomes.² Further, mounting evidence documents the potential for fracking, as well as the transportation, storage, and disposal

¹ E.g., Ellen Webb, et al. Neurodevelopmental and Neurological Effects of Chemicals Associated with Unconventional Oil and Natural Gas Operations and Their Potential Effects on Infants and Children. Reviews on Env'tl. Health, 25 Oct. 2017 (attached as Exhibit A).

² Janet Currie, Michael Greenstone, and Katherine Meckel. Hydraulic Fracturing and Infant Health: New Evidence from Pennsylvania. Science Advances, 13 Dec. 2017: Vol. 3, no. 12 (attached as Exhibit B). We submitted thirteen additional peer-reviewed studies documenting the human health risks posed by fracking chemicals and the potential for exposure to such chemicals through drinking water, air emissions, and other media with our comment letter on October 24, 2017, and we incorporate those studies by reference here.

of chemicals necessary for fracking, to contaminate the air and water.³ Indeed, even industry actors are beginning to acknowledge the threat of contamination from fracking operations.⁴

The need to address concerns over fracking chemical exposure is particularly acute now, as drilling activity in our region is again on the rise.⁵ Further, in 2017 the Legislature gave the Board a mandate to promulgate rules providing for the public disclosure of fracking-fluid ingredients. See MCA § 82-10-603. To implement this legislative directive and provide the public with timely access to fracking chemical information that is vital to protect their interests, we recommend the following changes to the Board’s rules and policies.

2. Proposed Amendments to Hydraulic Fracturing Chemical Disclosure Rules and Policies

First, to comply with new statutory requirements and provide the public with detailed chemical information when they need it most, the Board should amend its regulations to require disclosure of the specific chemical ingredients of fracking fluids and their associated chemical abstracts service (“CAS”) number before fracking occurs. The Legislature has directed the Board to require public disclosure of detailed information concerning planned hydraulic fracturing treatments, including “the chemical compound name and the chemical abstracts

³ See, e.g., Dominic C. DiGiulio and Robert B. Jackson, Impact to Underground Sources of Drinking Water and Domestic Wells from Production Well Stimulation and Completion Practices in the Pavillion, Wyoming, Field. Envtl. Sci. & Tech., 29 March 2016: Vol. 50, No. 8 (attached as Exhibit 12 to October 24, 2017 comments of Montana Environmental Information Center, Natural Resources Defense Council, Bonnie and Jack Martinell, Dr. David Lehnherr, David Katz, Anne Moses, Dr. Mary Anne Mercer, and Dr. Willis Weight (hereafter, “Oct. 2017 Comments”)); Llewellyn G.T., et al. (2015) Evaluating a Groundwater Supply Contamination Incident Attributed to Marcellus Shale Gas Development. Proceedings of the National Academy of Sciences of the U.S. 112(20) (attached as Exhibit 16 to Oct. 2017 Comments); Webb E., et al (2016) Potential Hazards of Air Pollutant Emissions from Unconventional Oil and Natural Gas Operations on the Respiratory Health of Children and Infants. Rev. Environ. Health 31(2) (attached as Exhibit 20 to Oct. 2017 Comments); Haley M., et al. (2016) Adequacy of Current State Setbacks for Directional High-Volume Hydraulic Fracturing in the Marcellus, Barnett, and Niobrara Shale Plays. Environmental Health Perspectives (attached as Exhibit 13 to Oct. 2017 Comments); Retrospective Case Study in Killdeer, North Dakota: Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, EPA/600/R-14/103; U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C. (attached as Exhibit C).

⁴ See, e.g., Mike Soraghan, Now It’s Oilmen Who Say Fracking Could Harm Groundwater, E&E News, Nov. 1, 2017 (attached as Ex. D) (discussing concerns of small oil and gas operators in Oklahoma regarding water contamination from fracking).

⁵ See Mike Lee, N.D. Sees Record 78,000-Barrel-a-Day Jump as Oil Prices Recover, E&E News, Dec. 18, 2017 (attached as Exhibit E) (describing major uptick in Bakken drilling activity in late 2017); Nathaniel Gronewold, Oil and Gas Industry Sets Sights on a Record-Breaking 2018, E&E News, Jan. 2, 2018 (attached as Exhibit F) (predicting that “[t]his year will be one for the record books for the U.S. petroleum industry”).

service registry number of [fracturing fluid] ingredients, including any hazardous component listed on a material safety data sheet ..., the product name, and the type of additives used,” as well as the “proposed rate or concentration of each ingredient or additive” MCA § 82-10-603(2) (emphasis added).⁶ Currently, however, the Board’s rules require pre-fracking disclosure only of “the trade name or generic name of the principle [sic] components or chemicals” in the fluid proposed for use, ARM 36.22.608(3), not the individual chemical compounds that make up the additive products in the fluid and their associated CAS numbers, as now required by statute, see MCA § 82-10-603(2). Thus, as we have pointed out in prior comments, pre-fracking disclosures under the Board’s current rules often consist merely of a list of additive types (e.g., friction reducer, crosslinker, breaker, biocide) with the additive product trade names sometimes included. Such lists do not identify specific chemical constituents for which a landowner could conduct baseline water quality testing and they do not enable citizens to investigate the risks to human health or the environment posed by specific chemicals that will be used in their area. To address this problem and satisfy the Legislature’s direction that the Board “shall require the disclosure of fracturing fluids in accordance with [MCA §§] 82-10-604 and this section,” i.e., § 82-10-603, the Board should amend its rules at ARM 36.22.608 to require that pre-fracking disclosures include the chemical compound name and the chemical abstracts service registry number for all chemical ingredients of the fluid planned for use in fracking or other chemical well stimulation, id. § 82-10-603(2), unless the operator proves under the statutory standards that a specific chemical ingredient qualifies as a trade secret under Montana law, see id. § 82-10-604.

Attached to this letter as Exhibit G is a “redlined” version of ARM 36.22.608 incorporating this proposed amendment. The specific amendment language proposed in Exhibit G has been endorsed by the Montana Petroleum Association and Northern Plains Resource Council.⁷

Second, the Board should amend its rules to require that the pre-fracking chemical disclosure described above be submitted to the Board and made available to the public online at least 45 days before fracking or other chemical well stimulation occurs. Such a requirement is essential to ensure that landowners have a reasonable opportunity to use the chemical disclosure information to design and implement effective plans for baseline water quality testing and to undertake other appropriate investigations. Accordingly, the 45-day advance disclosure requirement should apply equally to all wells, including wildcat and exploratory wells.

Disclosure of chemical information at least 45 days in advance of fracking or other chemical well stimulation is critical for landowners to carry out effective baseline testing of water supplies on their property. Baseline and post-drilling testing of water supplies near oil and gas wells is essential to protect those water sources—and the people who depend on them—by

⁶ This requirement is subject to the trade secret exception in MCA § 82-10-604.

⁷ As requested by the Board at its October 24, 2017 listening session, undersigned counsel and a representative of the Natural Resources Defense Council, on behalf of the coalition represented in this letter, have met twice with representatives of the Montana Petroleum Association and Northern Plains Resource Council to discuss areas of common ground in our respective proposals for this rulemaking. The language attached as Exhibit G was agreed to by all parties in those meetings.

establishing whether drilling, fracking, and associated activities have impacted water quality.⁸ Further, landowners must have access to information about the specific chemicals planned for use in an individual fracking job to develop an appropriate testing plan and maximize the reliability of the results. As described in the attached comments from Dr. Dominic DiGiulio, a research scientist and environmental engineer with expertise in hydraulic fracturing impacts on groundwater, simply testing for chemical constituents on a commercial lab's standard target analyte list ("TAL") may be inadequate to determine whether observed water quality impacts resulted from hydraulic fracturing or related activities. As Dr. DiGiulio explains:

Detection of organic compounds in domestic water wells potentially impacted by oil and gas development is currently largely reliant on analysis of compounds on target analyte lists (TALs) using standard [U.S. Environmental Protection Agency (EPA)] methods at commercial laboratories. However, most compounds used for oil and gas development (e.g., surfactants, glycols) are not present on TALs or reporting limits of compounds on TALs are too high to be useful. However, upon request, standard EPA methods can be modified by commercial laboratories to perform analysis better suited for determining impact from oil and gas development.⁹

Accordingly, use of baseline testing to determine whether water sources have been impacted by oil and gas development "logically begins with disclosure of chemicals used during oil and gas development, especially chemicals associated with production well stimulation (acid stimulation and hydraulic fracturing)."¹⁰ Conversely, "[i]ncomplete disclosure of chemicals used for well stimulation severely restricts selection of analytical techniques to detect chemical impact to domestic water wells" and other water supplies near oil and gas wells.¹¹ Where chemical disclosure occurs sufficiently far in advance of well stimulation activities, landowners can utilize that information to develop a more sophisticated and effective water testing plan. Indeed, "use of modified conventional methods" of water-sample analysis "and advanced analytical methods during baseline sampling combined with disclosure of compounds used for well stimulation prior

⁸ See attached comments from Dominic DiGiulio, Ph.D., PSE Healthy Energy ("DiGiulio Comments") (attached as Exhibit H) ("Baseline domestic water well sampling is necessary to discern chemical and physical changes in water quality and quantity due to activities related to oil and gas development."); Groundwater Prot. Council, FracFocus, Groundwater Quality & Testing, <https://fracfocus.org/groundwater-protection/groundwater-quality-testing> (last visited Feb. 7, 2018) (stating that American Petroleum Institute guidance recommends baseline water quality testing before fracking begins in a new area and affirming that landowners should conduct testing to establish a water quality baseline for post-fracking analysis); Hertha L. Lund, Willis Weight, and Dennis R. Lopach, *Fracking in Montana: Asking Questions, Finding Answers*, at 51 (Dec. 2015) (attached as Exhibit 8 to Oct. 2017 Comments) (recommending that surface owners establish a water quality baseline before fracking occurs in their area).

⁹ DiGiulio Comments at 2-3 (emphasis added). In his written comments, Dr. DiGiulio provides several examples of more sophisticated testing methodologies that can be used to detect compounds that are commonly used in well stimulation fluids but would not be detected using standard EPA methods employed by default at most commercial laboratories. See *id.* at 3-4.

¹⁰ *Id.* at 2.

¹¹ *Id.* at 2-3.

to well stimulation can be used to definitively document chemical impact to a domestic water well.”¹² This would provide essential protections for both the landowner and the operator by reducing or eliminating uncertainty over the presence and source of any water contamination. From the landowner’s perspective, as Dr. DiGiulio notes, employing the most sophisticated analytical methods available is essential “for a domestic water owner to avoid spurious allegations after stimulation occurs that detection of organic compounds not on TALs in his or her domestic water well ... are due to domestic well construction or of geogenic origin,” i.e., not the responsibility of an oil or gas operator working in the area.¹³

As Dr. DiGiulio describes, “[i]t typically takes at least 2 months to develop a sampling and analysis plan for subsequent chemical analysis.”¹⁴ Thus, landowners must have access to chemical disclosure information no fewer than 45 days before well stimulation occurs, as we have previously proposed, and preferably at least 60 days in advance of such operations, to allow time for development of a water sampling and analysis plan appropriate to an individual landowner’s circumstances.

Ensuring public disclosure of chemical information at least 45 days in advance of well stimulation also would enable landowners to investigate the risks associated with planned operations and, where appropriate, work with the operator to mitigate risk through the selection of chemicals that pose lesser threats to water supplies and human health. Aided by chemical disclosure rules in a growing number of states, researchers are learning that certain chemicals used in fracking fluids pose greater threats to water supplies and human health due to their mobility in groundwater, persistence in the environment, and toxicity.¹⁵ Utilizing this research, the local government in Broomfield, Colorado, reached a voluntary agreement with Extraction Oil & Gas, Inc., providing that Extraction would not use specified chemicals in fracking operations there in light of their elevated contamination and public health risks.¹⁶ This example demonstrates the potential for landowners and operators to cooperatively mitigate the risks associated with fracking with the benefit of greater transparency and sufficient time.

Establishing a reasonable minimum time period between an operator’s submission of chemical disclosure information and the operator’s execution of the relevant well stimulation activities also is important for first responders and other medical professionals who respond to

¹² Id. at 4.

¹³ Id. at 3.

¹⁴ Id. at 4.

¹⁵ Jessica D. Rogers, et al. A Framework for Identifying Organic Compounds of Concern in Hydraulic Fracturing Fluids Based on their Mobility and Persistence in Groundwater. Environ. Sci. Technol. Lett. 2015, 2, 158-164 (attached as Ex. I).

¹⁶ See Amended and Restated Oil and Gas Operator Agreement, a Surface use Agreement and a Settlement Agreement with Extraction Oil & Gas, Inc., Ex. B, Best Mgmt. Practices for Well Sites and New Wells at Well Sites, at 4-5 (Oct. 2017), available at <https://www.broomfield.org/DocumentCenter/View/25064> (last visited Jan. 30, 2018).

emergencies at drilling sites.¹⁷ Under the Board’s current rules, operators may provide chemical disclosures to the Board just 48 hours before fracking occurs “[f]or wildcat or exploratory wells or when the operator is unable to determine that hydraulic fracturing, acidizing, or other chemical treatment will be done to complete the well.” ARM 36.22.608(2). And in no case is the operator, or the Board, required by existing rules to ensure that chemical information is readily available to the public online by a date certain, before the chemicals are on site and well stimulation is underway. This framework threatens to put first responders in the untenable position of having to respond to an emergency at a site where volatile or hazardous chemicals are present without the information they need to prepare and respond effectively.¹⁸ It also means that physicians, nurses, and others providing emergency medical treatment may lack important information about the chemicals to which a patient has been exposed, hindering diagnosis and potentially necessitating expensive testing that could be avoided with more complete information.¹⁹ Indeed, medical professionals themselves are placed at risk when providing emergency treatment to patients exposed to unknown chemicals. In one well publicized incident, a Colorado nurse suffered blurred vision, loss of her sense of smell, and then “heart, liver and respiratory failures that nearly killed her” after treating an injured gas field worker who was soaked in a chemical fluid after a drilling accident.²⁰ The nurse was diagnosed with chemical exposure, but her treatment was hampered when her doctors could not get timely access to complete information about the chemical constituents of the well stimulation fluid the nurse and

¹⁷ The prospect of first responders and other medical professionals having to provide emergency treatment in response to incidents at oil and gas drilling sites is far from hypothetical. Just last week a fatal explosion occurred at an oil rig north of Baker. See Eastern Montana Man Dies in Oil Well Explosion, Billings Gazette (Feb. 2, 2018), available at http://billingsgazette.com/news/state-and-regional/eastern-montana-man-dies-in-oil-well-explosion/article_b3d5ac4a-4040-5ee1-aa94-7bf8d40db1fa.html#tracking-source=home-top-story-2 (last visited Feb. 6, 2018). Unfortunately, there are many other examples of serious incidents at drilling sites. See, e.g., Bruce Finley, A Dozen Fires and Explosions at Colorado Oil and Gas Facilities in 8 Months Since Fatal Blast in Firestone, Denver Post, Dec. 6, 2017 (attached as Exhibit J) (describing a dozen incidents involving fires at oil and gas sites, including several that injured workers); Mike Lee and Mike Soraghan, Five Presumed Dead After Oklahoma Gas Well Site Explosion, E&E News, Jan. 23, 2018 (attached as Exhibit K) (five oil field workers missing and presumed dead after rig explosion; fire officials stated that they “contained the blaze but decided not to try to extinguish it for fear of spreading hazardous chemicals”); James MacPherson, 1 Killed, 3 Hurt in Oil Well Explosion in North Dakota, Associated Press, June 20, 2016 (attached as Exhibit L) (one worker killed and two suffered extensive burns); Amy Dalrymple, Crews Work to Regain Control of Oil Well Near Watford City, N.D., Grand Forks Herald, Feb. 14, 2014 (attached as Exhibit M) (fifteen workers fled after oil well blowout; witness who lived nearby observed green vapor after the incident).

¹⁸ See Comments of David Lehnherr, MD (attached as Exhibit N) (comments of former emergency room physician and volunteer first responder describing hazards to first responders who lack access to information about chemicals present at site of emergency).

¹⁹ See Comments of Lori G. Byron MD, FAAP (attached as Exhibit O).

²⁰ Susan Greene, Oil Secret Has Nasty Side Effect, Denver Post (July 23, 2008) (attached as Exhibit P).

her patient had been exposed to.²¹ Ensuring that chemical information is readily available to the public before the chemicals are on site and in use is essential to avoid putting Montana's first responders and other medical professionals—and the people they work to help—in such dangerous and unnecessary situations.

Finally, requiring chemical disclosure at least 45 days in advance of well stimulation would not impose a substantial burden on operators. From a review of well files available on the Board's website, it is apparent that far more than 45 days routinely elapse between the date an operator submits its pre-fracking chemical disclosure and the date of well completion—even in the absence of the requested rule.²² Further, the 45-day proposal itself represents a compromise because, as noted above, at least two months may be required for landowners to develop an individualized water testing plan in many circumstances.²³

Third, the Board should create and require use of a form, accompanied by guidelines from the Board, to guide operators in substantiating trade secret claims under the fracking chemical disclosure rules. In SB 299 the Legislature established an important new requirement that operators seeking an exemption from chemical disclosure requirements on the ground that a specific fracking-fluid ingredient constitutes a trade secret must formally request an exemption from the Board's administrator. MCA § 82-10-604(1)(a). Further, the operator must prove that the chemical information at issue qualifies as a trade secret under state law by making a detailed evidentiary showing as provided by the statute. See id. § 82-10-604(2). In order to assist operators in supplying the information called for by the statute and ensure that the Board's administrator has the information he needs to grant or deny a trade secret exemption request consistent with the statutory standards, we recommend that the Board adopt and require operators to use a trade secret request substantiation form. We also recommend that the Board issue a guidance document to accompany the form that provides instructions for adequately documenting and supporting exemption requests. In Wyoming, which has substantially identical requirements for substantiating trade secret claims under that state's fracking chemical disclosure rules, the use of a form accompanied by appropriate instructions from the state regulator has helped ensure that the regulator receives the necessary information to make timely and supported trade secret determinations.²⁴ To that end, the Board's proposed guidelines should underscore that operators must provide an ingredient-specific justification for their trade secret request, not a generic explanation of why maintaining the confidentiality of trade secrets generally is valuable to the company. So, for example, an operator must explain how the specific chemical ingredient for which confidentiality is sought is commercially valuable to the company, not a generic statement that innovative trade secret chemicals, in general, help the company maintain a competitive edge. See MCA § 82-10-604(2)(d).

²¹ See id. (explaining that Weatherford refused to disclose the complete chemical ingredients of the fluid at issue, ZetaFlow, to the nurse's doctors based on trade secret claims).

²² E.g., Continental Res. Levensgood 3-5H, API# 25-083-23145 (116 days between submission of pre-frack chemical disclosure and well completion), Continental Res. Mabel 1-14H, API# 25-083-23138 (171 days), Thor Res. USA Laas 22-14, API# 25-051-21835 (249 days), Kraken Operating Foxx 1-6H, API# 25-085-21913 (82 days).

²³ DiGiulio Comments at 4.

²⁴ The Wyoming form and guidelines are attached as Exhibit Q.

Fourth, the Board should create a separate page on its website to house pre- and post-fracking chemical disclosures, any documentation provided by operators to support their requests for trade secret protection (redacted as necessary and appropriate), and any determinations by the Board's administrator concerning trade secret requests. The information should be organized in a format that allows an individual with the operator's name, well name, and/or well location to easily locate the documentation for that well. Collecting this information in one place will simplify and enhance public access to this important information and reduce the need for individual calls and/or written public records requests seeking this information, which impose an administrative burden on the requester and the Board's staff. Further, the Board should adopt procedures to ensure that chemical disclosures are promptly posted to this web site so they are available for landowner use no fewer than 45 days before well stimulation occurs.

3. Baseline and Post-Drilling Water Testing

As stated in our comments at the Board's October 24, 2017, listening session, we strongly support the proposal for the Board to adopt rules requiring operator-funded baseline and post-drilling testing of water sources near oil and gas wells. As described above, such testing is essential to ensure that any impacts on water sources from oil and gas drilling and related activities are detected and to avoid or mitigate risks to human and livestock health and the environment. Further, such testing is vital to identifying the source of any contamination, which would allow landowners to pursue appropriate remedies for contamination and also protect operators who did not cause the adverse impact. Requiring operators to fund and implement such testing—as is required in other oil- and gas-producing states including Wyoming,²⁵ Colorado,²⁶ and California,²⁷—would ensure equal access to this important information for all landowners as well as appropriate oversight by the regulating agency. Given the precedent for mandatory water testing in other states with substantial oil and gas development activity, there can be no argument that funding and/or implementing testing is unduly burdensome for industry. Indeed, in Colorado the state-mandated water testing program was preceded by a voluntary program developed by industry.²⁸

While our peer states provide helpful examples for water testing rules, however, the Board should take the opportunity to learn from and improve upon the practices in other states rather than adopting another state's program wholesale. To facilitate that process, before developing proposed rules governing baseline and post-drilling testing the Board should provide

²⁵ WY ADC OIL GEN Ch. 3, § 46.

²⁶ 2 CCR 404-1:609.

²⁷ Cal. Water Code § 10783; Cal. State Water Res. Control Bd., Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Well Stimulation (July 7, 2015), available at https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/docs/model_criteria_final_070715.pdf (last visited Feb. 1, 2018).

²⁸ See Colo. Oil & Gas Ass'n, Voluntary Baseline Groundwater Quality Sampling Program, Example Sampling and Analysis Plan (Nov. 5, 2011), available at <http://region8water.colostate.edu/PDFs/Factsheet%20COGA-sample-analysis-Plan.pdf> (last visited Feb. 1, 2018).

an opportunity for the public to submit technical comments addressing appropriate testing protocols and related requirements.

Finally, while the proposal for mandatory water testing was advanced in the context of the Board's hydraulic fracturing rulemaking, it is essential that testing requirements apply equally to all oil and gas drilling operations in Montana, regardless of whether fracking or other chemical well stimulation is part of the drilling program.

Should you have any questions about these comments, please contact the undersigned at the number or email address below.

Sincerely,

A handwritten signature in blue ink, appearing to read "Katherine O'Brien".

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